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**Baggenstoss**

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(54) **SYSTEM AND METHOD FOR TRAINING A CLASS-SPECIFIC HIDDEN MARKOV MODEL USING A MODIFIED BAUM-WELCH ALGORITHM**

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\* cited by examiner

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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#### (57) ABSTRACT

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A system and method for training a class-specific hidden Markov model (HMM) is used for modeling physical phenomena, such as speech, characterized by a finite number of states. The method receives training data and estimates parameters of the class-specific HMM from the training data using a modified Baum-Welch algorithm, which uses likelihood ratios with respect to a common state (e.g., noise) and based on sufficient statistics for each state. The parameters are stored for use in processing signals representing the physical phenomena, for example, in speech processing applications. The modified Baum-Welch algorithm is an iterative algorithm including class-specific forward and backward procedures and HMM reestimation formulas.

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11 Claims, 5 Drawing Sheets

